

WHAT IS CLAIMED IS:

1. A pulse jet printhead comprising:

(a) a multiple die printhead comprising:

- (i) an orifice plate comprising a plurality of orifices; and
- (ii) a plurality of thermal printhead dies present on a surface of said orifice plate in operational alignment with said orifices to produce a least one firing chamber; and

(b) a volume of an aqueous fluid that includes a biopolymer or precursor thereof in said at least one firing chamber.

2. The pulse jet printhead according to Claim 1, wherein said printhead comprises from 2 to about 10 printhead dies.

3. The pulse jet printhead according to Claim 2, wherein said printhead comprises from 2 to 5 printhead dies.

4. The pulse jet printhead according to Claim 3, wherein said printhead comprises 3 printhead dies.

5. The pulse jet printhead according to Claim 1, wherein each of said printhead dies is a thermal pulse jet printhead die and comprises at least one resistor element on a surface of a semiconductor substrate.

6. The pulse jet printhead according to Claim 1, wherein said biopolymer is selected from the group consisting of polypeptides and nucleic acids.

7. The pulse jet printhead according to Claim 1, wherein said precursor thereof is selected from the group consisting of amino acids and nucleotides.

8. The pulse jet printhead according to Claim 1, wherein said printhead is present in a printhead assembly that further includes at least one fluid reservoir in fluid communication with said firing chamber.

9. The pulse jet according to Claim 8, wherein said fluid reservoir comprises said aqueous fluid that includes a biopolymer.

10. A pulse jet printhead assembly comprising:

(a) a multiple die printhead comprising:

(i) an orifice plate comprising a plurality of orifices; and

(ii) a plurality of thermal printhead dies present on a surface of said orifice plate in operational alignment with said orifices to produce a least one firing chamber; and

(b) at least one fluid reservoir, wherein said fluid reservoir is in fluid communication with said firing chamber.

11. The pulse jet printhead assembly according to Claim 10, wherein said printhead comprises from 2 to about 10 printhead dies.

12. The pulse jet printhead assembly according to Claim 11, wherein said printhead comprises from 2 to 5 printhead dies.

13. The pulse jet printhead assembly according to Claim 12, wherein said printhead comprises 3 printhead dies.

14. The pulse jet printhead assembly according to Claim 10, wherein said pulse jet printhead assembly is a thermal pulse jet printhead assembly and each of said printhead dies comprises at least one resistor element on a surface of a semiconductor substrate.

15. The pulse jet printhead assembly according to Claim 10, wherein said reservoir contains a volume of an aqueous fluid that includes a biopolymer or precursor thereof.

16. The pulse jet printhead assembly according to Claim 15, wherein said biopolymer is selected from the group consisting of polypeptides and nucleic acids.

17. The pulse jet printhead assembly according to Claim 15, wherein said precursor thereof is selected from the group consisting of amino acids and nucleotides.

5 18. A method of depositing a volume of an aqueous fluid containing a biopolymer or precursor thereof on a surface of a substrate, said method comprising:

(a) positioning a pulse jet printhead according to Claim 1 in opposing relation to said substrate surface; and

10 (b) actuating said pulse jet printhead to expel a volume of said aqueous fluid onto said substrate surface.

15 19. The method according to Claim 18, wherein said method further comprises depositing a volume of a second aqueous fluid containing a biopolymer or precursor thereof onto said substrate surface.

20 20. The method according to Claim 19, wherein said method is a method of making a biopolymer array.

21. The method according to Claim 20, wherein said biopolymer is selected from the group consisting of polypeptides and nucleic acids.

22. The method according to Claim 20, wherein said precursor is selected from the group consisting of amino acids and nucleotides.

25 23. A biopolymeric array produced according to the method of Claim 20.

24. A method of detecting the presence of an analyte in a sample, said method comprising:

30 (a) contacting (i) a biopolymeric array according to Claim 23 having a polymeric ligand that specifically binds to said analyte, with (ii) a sample suspected of comprising said analyte under conditions sufficient for binding of said analyte to a biopolymeric ligand on said array to occur; and

detecting the presence of binding complexes on the surface of the said array to obtain assay data which is employed to detect the presence of said analyte in said sample.

- 5 25. The method according to Claim 24, wherein said method further comprises a data transmission step in which a result from a reading of the array is transmitted from a first location to a second location.
- 10 26. A method according to Claim 25, wherein said second location is a remote location.
- 15 27. A method comprising receiving data representing a result of a reading obtained by the method of Claim 24.
- 20 28. A kit for use in an assay that employs an array, said kit comprising:
an array according to claim 23; and
instructions for using said array in an analyte detection assay according to Claim 24.
29. An automated pulse jet printing system, said system comprising a pulse jet printhead according to Claim 1.